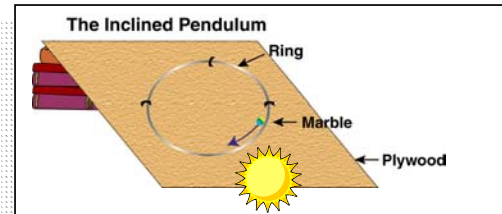




## Directions:

One person in each group should release the marble, another person should keep track of time (10 seconds), and another person should count how many swings the marble makes.

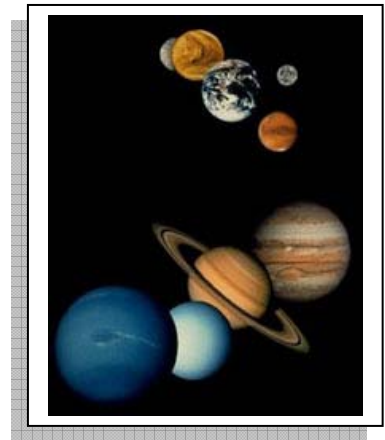
1. Place one book under the board and ring apparatus. Set the model of the Sun in front of the board, like the illustration. Place a marble inside the ring and practice letting it roll back and forth in an arc.
2. Practice counting the number of times the marble swings across a marked spot—at the bottom of the ring—in 10 seconds.
3. Once you have practiced, release the marble from a marked spot—towards the top of the ring—and count the number of swings in 10 seconds. Record this information in your data table.
4. Add one more book to the bottom of the apparatus. Repeat procedure 3. Adding books simulates or models increased gravity.
5. Repeat procedure 3 using three, four, and five books. Record the results in the data table below.



Number of Books	Number of Swings the Marble Makes in Ten Seconds
1.	
2.	
3.	
4.	
5.	

6. Describe what happened in this activity.

7. What did this activity model? **Hint:** Think of the relationship between the Sun and its planets.



8. What did the marble represent in this activity?

9. Based on your results, how does the amount of gravity affect the speed of the marble?

10. In what ways does this compare with planets orbiting the Sun?